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**CURLING IRON MAKING HEAT SOURCE OF HEATED FLUID****Technical Field**

The present invention relates, in general, to a  
5 curling iron using heated fluid as its heat source and,  
more particularly, to a curling iron using heated fluid  
as its heat source for heating hair, thus maintaining a  
constant temperature capable of accomplishing a desired  
curling effect and preventing an excessive increase in  
10 its temperature so as to prevent damage to the hair.

**Background Art**

As well known to those skilled in the art,  
conventional curling irons used for curling hair  
15 typically use electric coil heaters as heat sources  
thereof. Such an electric coil heater for the curling  
irons generates heat when it is operated by electricity,  
so that the heat is directly transferred from the heater  
to the hair during a curling process.

20 However, the conventional curling irons are  
problematic in that they cannot maintain constant

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temperatures since they are repeatedly turned on and turned off. The curling effect of the conventional curling irons is thus reduced. In addition, the temperature of the heater of the conventional curling iron is sometimes excessively increased during a curling process, and, in such a case, hair may be thermally damaged.

#### Disclosure of the Invention

10 Accordingly, the present invention has been made keeping in mind the above problems occurring in the prior art, and an object of the present invention is to provide a curling iron which uses heated fluid as its heat source for heating hair, thus maintaining a constant temperature  
15 capable of accomplishing a desired curling effect and preventing an excessive increase in its temperature so as to prevent damage to the hair.

In order to accomplish the above object, the present invention provides a curling iron, comprising heated  
20 fluid used as a heat source of the iron, a fluid heating unit which heats the fluid used as the heat source, a heating unit which transfers heat of the heated fluid to hair, and thereby curls the hair, and curling tongs which

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support the heating unit so as to allow the heating unit to heat the hair while the curling tongs grasp the hair.

### **Brief Description of the Drawings**

5       The above and other objects, features and other advantages of the present invention will be more clearly understood from the following detailed description taken in conjunction with the accompanying drawings, in which:

FIG. 1 is a perspective view of a curling iron,  
10       according to a preferred embodiment of the present invention; and

FIG. 2 is a sectional view of the curling iron of FIG. 1.

### **Best Mode for Carrying Out the Invention**

15       Reference should now be made to the drawings, in which the same reference numerals are used throughout the different drawings to designate the same or similar components.

20       FIG. 1 is a perspective view of a curling iron, according to a preferred embodiment of the present

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invention. FIG. 2 is a sectional view of the curling iron of FIG. 1.

The curling iron of the present invention uses heated fluid as its heat source for heating a target material, that is, hair, and, in the preferred embodiment of the drawings, the heated fluid is steam 100. The steam 100 is typically increased in its temperature to so that the steam 100 sufficiently heats the hair, without thermally damaging the hair.

10 The curling iron of the present invention has a fluid heating unit which heats a fluid used as the heat source. In the preferred embodiment, the fluid heating unit is a steam generator 200 which is electrically operated to produce the steam 100. The steam generator  
15 200 includes a plurality of steam outlet ports 210, a plurality of steam supply control switches 212, and a plurality of condensed water inlet ports 220, ~~and a plurality of check valves for preventing an undesired flow of the steam 100 into the condensed water inlet~~  
20 ~~ports 220.~~

A power cord 230 and a power switch 232 are provided at the steam generator 200. The power cord 230 is used for supplying an electric current from an electric power

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source to the steam generator 200, while the power switch 232 is used for turning on or off the steam generator 200.

The curling iron of the present invention also has a heating unit which transfers heat of the steam 100 to hair, and thereby curls the hair. The heating unit includes a steam feeding tube 300 that is connected to one of the steam outlet ports 210 of the steam generator 200 so as to feed the steam 100 from the steam generator 200 to a steam storing/heat dissipating tube 310. The steam dissipating tube 310 receives the steam 100 fed through the steam feeding tube 300, stores the steam 100 therein, and transfers heat of the steam 100 to the hair. A condensed water discharging unit 312 is connected to the steam storing/heat dissipating tube so as to collect condensed water produced by a condensation of the steam 100 in the steam storing/heat dissipating tube 310, prior to returning the condensed water to the steam generator 200 through one of the condensed water inlet ports 220. A condensed water returning tube 320 is connected at both ends thereof to the condensed water discharging unit 312 and one of the condensed water inlet ports 220, and returns the condensed water from the condensed water discharging unit 312 to the steam generator 200 through the condensed water inlet port 220.

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When the steam 100 is fed from the steam generator 200 to the steam storing/heat dissipating tube 310 through the steam feeding tube 300, the steam 100 heats the steam feeding tube so that the heated tube may burn a user when the user accidentally comes into contact with the heated tube 300. In an effort to overcome such a problem, it is preferred to finish the outer surface of the steam feeding tube 300 with a thermal insulating material.

10 The steam storing/heat dissipating tube is preferably produced by using a metal having high thermal conductivity, and has a shape which allows the steam dissipating tube 310 to come into effective contact with the hair during a curling process.

15 The curling iron of the present invention further includes curling tongs which support the heating unit so as to allow the heating unit to heat the hair while the curling tongs grasp the hair. The curling tongs are comprised of a handle 400, a main arm 410, a sub-arm 420, 20 and a lever 430. The handle 400 is used as a grip of the curling tongs, with a part of the steam feeding tube 300 axially passing through the handle 400. The main arm 410

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is connected to the handle 400, and supports the steam storing/heat dissipating tube 310 therein.

The sub-arm 420 is hinged to the main arm 410 such that the sub-arm 420 comes into contact with the steam storing/heat dissipating tube of the main arm 410 to  
5 grasp the hair while the hair is heated by the steam heat, or moves away from the steam storing/heat dissipating tube 310 to release the hair after heating the hair. The lever 430 is connected to the sub-arm 420 so as to allow  
10 the user to rotate the sub-arm 420 relative to the main arm 410 around the hinged joint of the two arms 410 and 420.

Since the steam generator 200 has the plurality of steam outlet ports 210 and the plurality of condensed  
15 water inlet ports 220, as described above, it is possible to connect a plurality of steam feeding tubes 300 and a plurality of condensed water returning tubes 320 to the steam generator 200, at the same time. Therefore, two or more curling tongs may be used with the steam generator  
20 200 at the same time, so that two or more users may simultaneously curl the hair of several persons by use of a single steam generator 200. The curling irons of the present invention are thus preferably used in beauty

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shops or other places in which a plurality of  
hairdressers curl the hair of several persons at the same  
time.

The steam 100 from the steam generator 200 is  
5 supplied into the steam feeding tube 300 connected to the  
steam outlet ports 210, and then transferred to the steam  
storing/heat dissipating tube 310.

Water condensed from the steam 100 returns to the  
steam generator 200 through the condensed water returning  
10 tube 320 and the condensed water inlet port 220.

With the steam supply control switch 212 on, the  
steam 100 is passed through the steam feeding tube 300.

The operational effect of the curling iron of the  
present invention will be described herein below, with  
15 reference to the drawings.

At first, the power switch 232 of the steam  
generator 200 is turned on to allow the steam generator  
200 to produce steam 100 therein. Thereafter, the steam  
feeding tube 300 is connected to a selected one of the  
20 steam outlet ports 210 of the steam generator 200, and  
the condensed water returning tube 320 is connected to a  
selected one of the condensed water inlet ports 220.



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When a steam supply control switch 212 associated with the selected steam outlet port 210 is turned on, the steam 100 flows from the steam generator 200 into the steam feeding tube through the steam outlet port 210.

5       The steam 100 is, thereafter, fed through the steam feeding tube 300 into the steam dissipating tube that is supported by the main arm of the curling tongs. At the steam storing/heat dissipating tube the steam 100 heats the tube so that the tube radiates heat to the outside.

10       Therefore, when the user who grips the handle 400 manipulates the lever 430 to close the main and sub-arms 410 and 420, the two arms 410 and 420 grasp the hair while the steam storing/heat dissipating tube heats the hair by use of the steam heat, thus curling the hair.

15       During the curling process, the temperature of the steam 100 inside the steam storing/heat dissipating tube 310 is reduced, so that the steam 100 is condensed to produce condensed water. The condensed water is primarily collected in the condensed water discharging unit 312,  
20       and sequentially passes through the condensed water returning tube 320 and the condensed water inlet port 220, thus being returned to the steam generator 200. The condensed water discharging unit 312 is designed to

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discharge only the condensed water from the steam storing/heat dissipating tube while preventing leakage of the steam 100 from the steam storing/heat dissipating tube 310 into the condensed water returning tube 320.

5        The steam 100 is condensed to water, which returns to the steam generator 200 through the condensed water returning tube 320 and the condensed water inlet port 220.

#### **Industrial Applicability**

10        As described above, the present invention provides a curling iron using heated fluid as its heat source for heating hair. The curling iron of the present invention is comprised of a fluid heating unit which heats the fluid to produce steam used as the heat source, a heating  
15        unit which transfers heat of the steam to hair, and thereby curls the hair, and curling tongs which support the heating unit so as to allow the heating unit to heat the hair while the curling tongs grasp the hair. Since the curling iron uses heated fluid as its heat source for  
20        heating hair, the curling iron maintains a constant temperature capable of accomplishing a desired curling effect and prevents an excessive increase in its temperature so as to prevent damage to the hair.